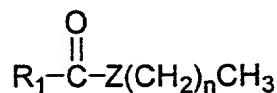


CLAIMS

1. A compound having the formula:

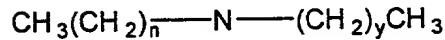


wherein R₁, Z and the carbonyl can be comprised by a common ring, wherein
5 R₁ comprises a chromophore that absorbs light from the visible wavelength
range; wherein the segment Z comprises one or more of C, O, N and S; and
wherein n is an integer that is at least 12.

2. The compound of claim 1 wherein n is at least 17 and not more
10 than 299.

3. The compound of claim 1 wherein the segment Z(CH₂)_nCH₃ is
NH(CH₂)_nCH₃.

15 4. The compound of claim 1 wherein the segment Z(CH₂)_nCH₃ is

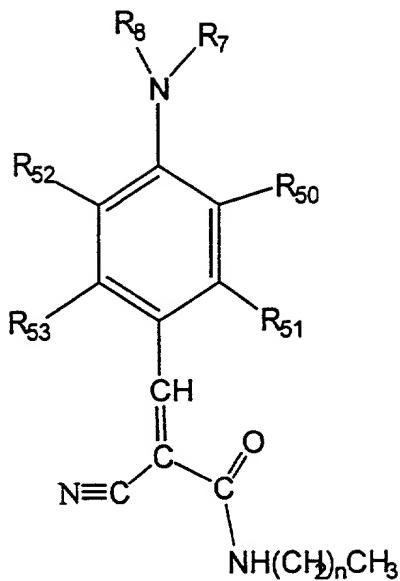


wherein y is an integer of from 0 to 300, and can be the same or different than
20 n.

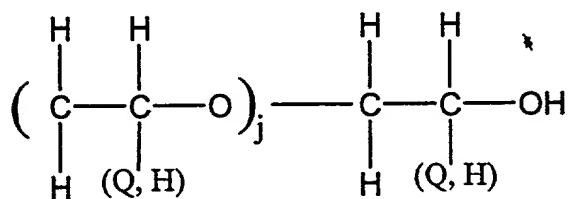
25 5. The compound of claim 1 wherein the R₁ and the carbonyl
together comprise a chemical group selected from the group consisting of ester,
lactone, amide, lactam, and imide.

25

6. The compound of claim 1 having the formula

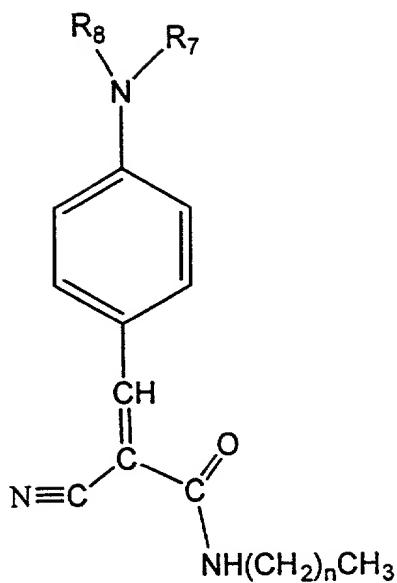


wherein R_{50} , R_{51} , R_{52} , and R_{53} are selected from the group consisting of hydrogen, halogens, hydroxy groups, alkoxy groups, trifluoromethyl groups, and alkyl groups, and can be the same as one another or different than one another; and wherein at least one of R_7 and R_8 comprises a chain having the formula,

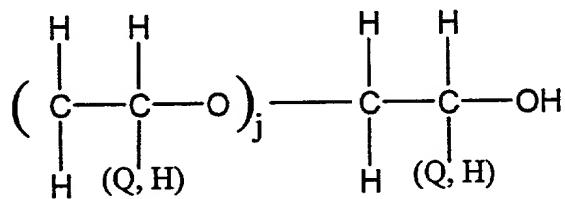


wherein j is an integer from 0 to about 300, wherein the representation of " (Q, H) " indicates that either a group Q or a hydrogen can be in the shown positions, wherein the group Q is either an alkyl group or an aryl group, and wherein Q can vary amongst different alkyl and aryl groups within the chain.

7. The compound of claim 1 having the formula

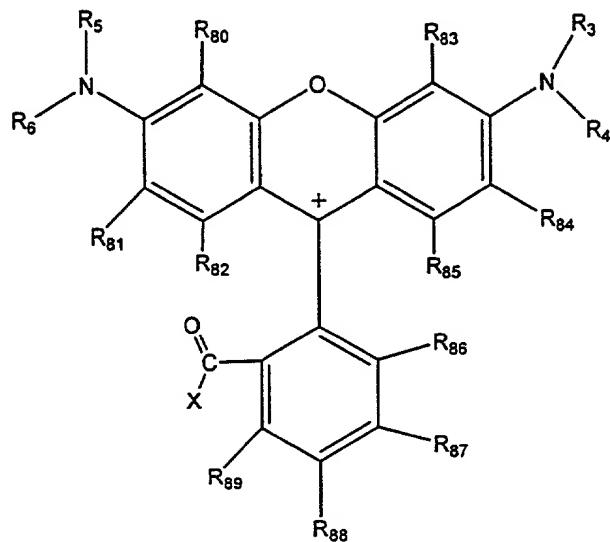


wherein at least one of R_7 and R_8 comprises a chain having the formula,



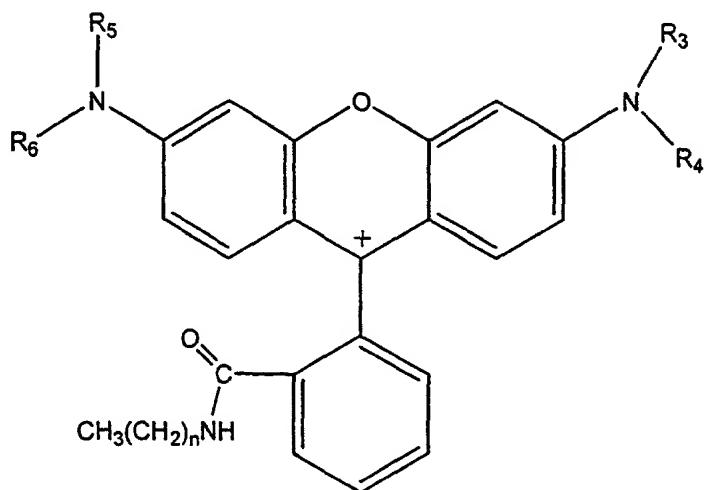
5 wherein j is an integer from 0 to about 300, wherein the representation of " (Q, H) " indicates that either a group Q or a hydrogen can be in the shown positions, wherein the group Q is either an alkyl group or an aryl group, and wherein Q can vary amongst different alkyl and aryl groups within the chain.

8. The compound of claim 1 having the formula



wherein R₈₀, R₈₁, R₈₂, R₈₃, R₈₄, R₈₅, R₈₆, R₈₇, R₈₈, and R₈₉ are selected from the group consisting of hydrogen, halogens, hydroxy groups, alkoxy groups, trifluoromethyl groups, and alkyl groups, and can be the same as one another or different than one another; and wherein R₃, R₄, R₅ and R₆ comprise carbon and can be the same or different than one another.

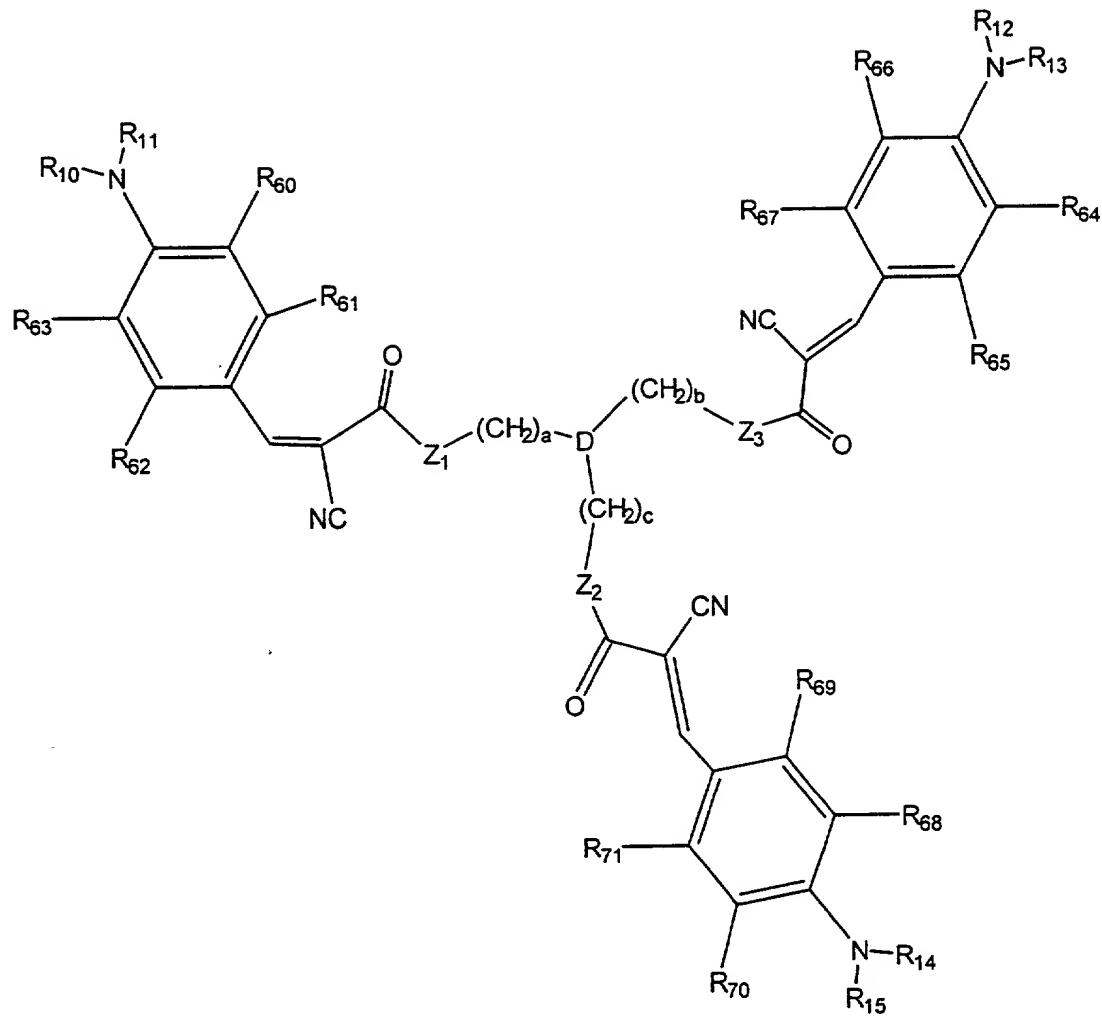
9. The compound of claim 1 having the formula



wherein R₃, R₄, R₅ and R₆ comprise carbon and can be the same or different than one another.

5

10. A compound having the formula:



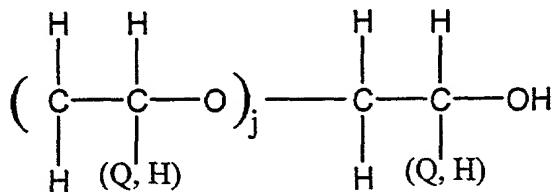
wherein R_{60} , R_{61} , R_{62} , R_{63} , R_{64} , R_{65} , R_{66} , R_{67} , R_{68} , R_{69} , R_{70} , and R_{71} are selected

from the group consisting of hydrogen, halogens, hydroxy groups, alkoxy groups, trifluoromethyl groups, and alkyl groups, and can be the same as one another or different than one another; wherein D comprises carbon, sulphur, phosphorus or nitrogen; wherein R_{10} , R_{11} , R_{12} , R_{13} , R_{14} and R_{15} comprise at least one of 5 carbon or hydrogen, and can be the same or different than one another; wherein Z_1 , Z_2 and Z_3 can be the same or different than one another and comprise S, O, C or N; and wherein a, b and c can be the same or different than one another and are integers that are at least 1.

10 11. The compound of claim 10 wherein R_{60} , R_{61} , R_{62} , R_{63} , R_{64} , R_{65} , R_{66} , R_{67} , R_{68} , R_{69} , R_{70} , and R_{71} are hydrogen.

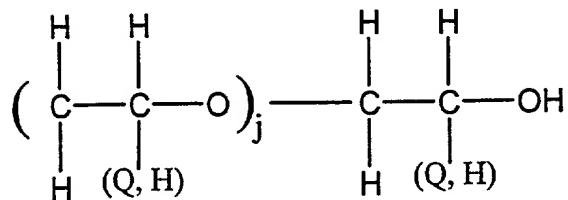
12. The compound of claim 10 wherein D is nitrogen, and is in a cationic form.

15 13. The compound of claim 10 wherein at least one of R_{10} , R_{11} , R_{12} , R_{13} , R_{14} and R_{15} comprises a chain having the formula



wherein j is an integer from 0 to about 300, wherein the representation of "(Q, 20 H)" indicates that either a group Q or a hydrogen can be in the shown positions, wherein the group Q is either an alkyl group or an aryl group, and wherein Q can vary amongst different alkyl and aryl groups within the chain.

14. The compound of claim 10 wherein each of R_{10} , R_{11} , R_{12} , R_{13} , R_{14} and R_{15} comprises a chain having the formula

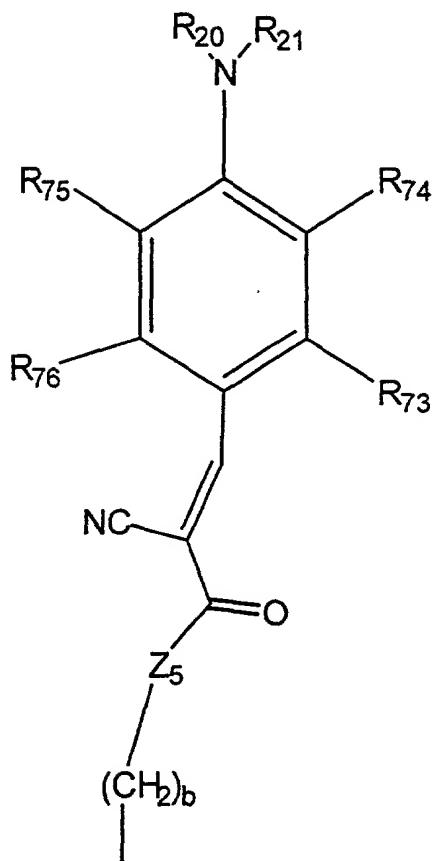


wherein j is an integer from 0 to about 300, wherein the representation of "(Q, H)" indicates that either a group Q or a hydrogen can be in the shown positions, wherein the group Q is either an alkyl group or an aryl group, and wherein Q can vary amongst different alkyl and aryl groups within the chain.

15. The compound of claim 10 wherein each of Z_1 , Z_2 and Z_3 is NH.

10

16. A compound comprising at least two segments of the formula shown below joined to one another through a common atom or multi-atom structure:



wherein R_{73} , R_{74} , R_{75} , and R_{76} are selected from the group consisting of hydrogen, halogens, hydroxy groups, alkoxy groups, trifluoromethyl groups, and alkyl groups, and can be the same as one another or different than one another; wherein R_{20} , R_{21} comprise at least one of carbon or hydrogen, and can be the same or different than one another; wherein Z_5 comprises at least one of C, S, O or N; wherein b comprises an integer that is at least 1; the integer b being the same or different amongst the different segments; Z_5 being the same or different amongst the different segments; and the groups R_{20} and R_{21} being the same or different amongst the different segments.

10

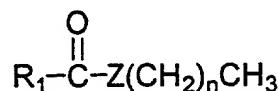
17. The compound of claim 16 wherein R_{73} , R_{74} , R_{75} , and R_{76} are hydrogen.

18. The compound of claim 16 wherein the compound comprises at least three of the segments having the shown formula.

19. The compound of claim 16 wherein the at least two segments are joined through a common atom, said common atom being either carbon, sulfur, phosphorus or nitrogen.

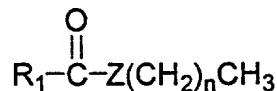
20

20. A solid phase change ink composition consisting essentially of a colorant having the formula:



25 wherein R_1 , Z and the carbonyl can be comprised by a common ring, wherein said colorant comprises a chromophore that absorbs light from the visible wavelength range, wherein the segment Z comprises one or more of carbon, oxygen, sulfur and nitrogen, and wherein n is an integer that is at least 12.

21. A solid phase change ink composition, comprising:
a phase change ink carrier; and
a colorant having the formula:



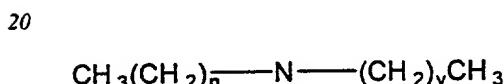
5 wherein R_1 , Z and the carbonyl can be comprised by a common ring, wherein
said colorant comprises a chromophore that absorbs light from the visible
wavelength range, wherein the segment Z comprises one or more of carbon,
oxygen, sulfur and nitrogen, and wherein n is an integer that is at least 12.

10 22. The phase change ink of claim 21 wherein n is at least 17 and not
more than 299.

23. The phase change ink of claim 21 wherein Z is O, NH or S.

15 24. The phase change ink of claim 21 wherein the segment
 $\text{Z}(\text{CH}_2)_n\text{CH}_3$ is $\text{NH}(\text{CH}_2)_n\text{CH}_3$.

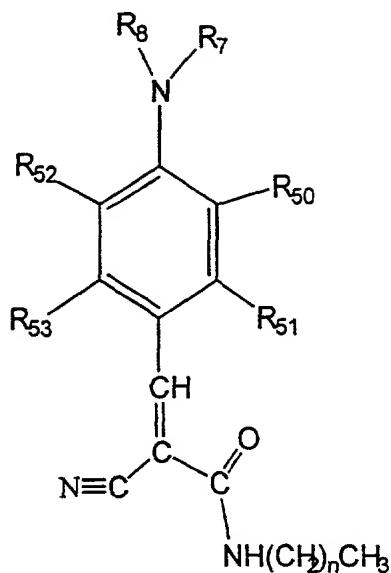
25. The phase change ink of claim 21 wherein the segment
 $\text{Z}(\text{CH}_2)_n\text{CH}_3$ is



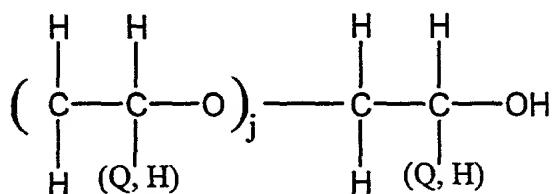
wherein y is an integer of from 0 to 300, and can be the same or different
than n .

25 26. The phase change ink of claim 21 wherein the R_1 and the carbonyl
together comprise a chemical group selected from the group consisting of ester,
lactone, amide, lactam, and imide.

27. The phase change ink of claim 21 wherein the colorant has the formula



wherein R₅₀, R₅₁, R₅₂, and R₅₃ are selected from the group consisting of
5 hydrogens, halogens, hydroxy groups, alkoxy groups, trifluoromethyl groups, and
alkyl groups, and can be the same as one another or different than one another;
wherein at least one of R₇ and R₈ comprises a chain having the formula,

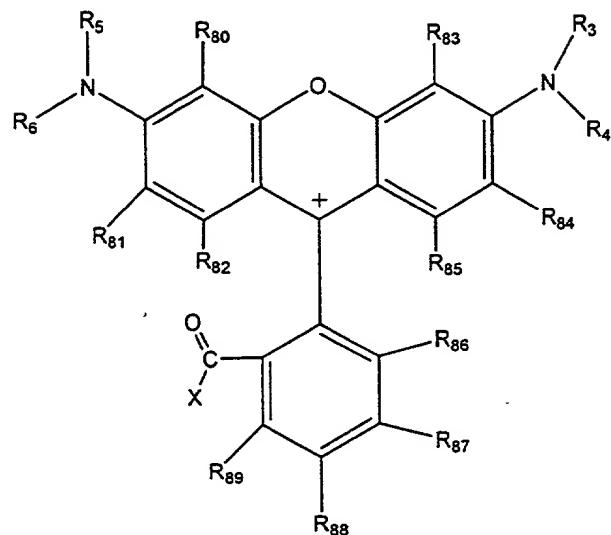


wherein j is an integer from 0 to about 300, wherein the representation of "(Q,
10 H)" indicates that either a group Q or a hydrogen can be in the shown

positions, wherein the group Q is either an alkyl group or an aryl group, and wherein Q can vary amongst different alkyl and aryl groups within the chain.

28. The phase change ink of claim 27 wherein R_{50} , R_{51} , R_{52} , and R_{53} are hydrogen.

29. The phase change ink of claim 21 wherein the colorant has the formula

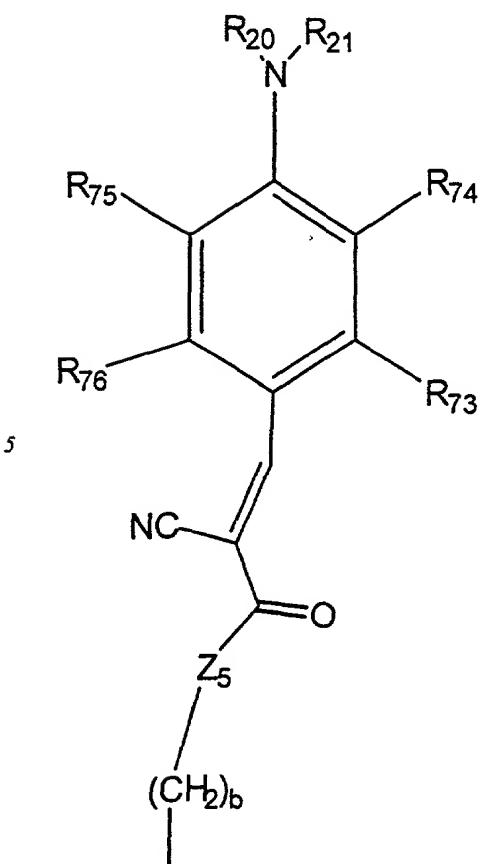


10 wherein R_{80} , R_{81} , R_{82} , R_{83} , R_{84} , R_{85} , R_{86} , R_{87} , R_{88} , and R_{89} are selected from the group consisting of hydrogen, halogens, hydroxy groups, alkoxy groups, trifluoromethyl groups, and alkyl groups, and can be the same as one another or different than one another; wherein R_3 , R_4 , R_5 and R_6 comprise carbon and can be the same or different than one another.

30. The phase change ink of claim 29 wherein R_{80} , R_{81} , R_{82} , R_{83} , R_{84} ,
 R_{85} , R_{86} , R_{87} , R_{88} , and R_{89} are hydrogen.

W 6332000 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

31. A solid phase change ink composition, comprising:
a phase change ink carrier; and
a colorant having at least two segments of the formula shown below joined to
one another through a common atom or multi-atom structure:



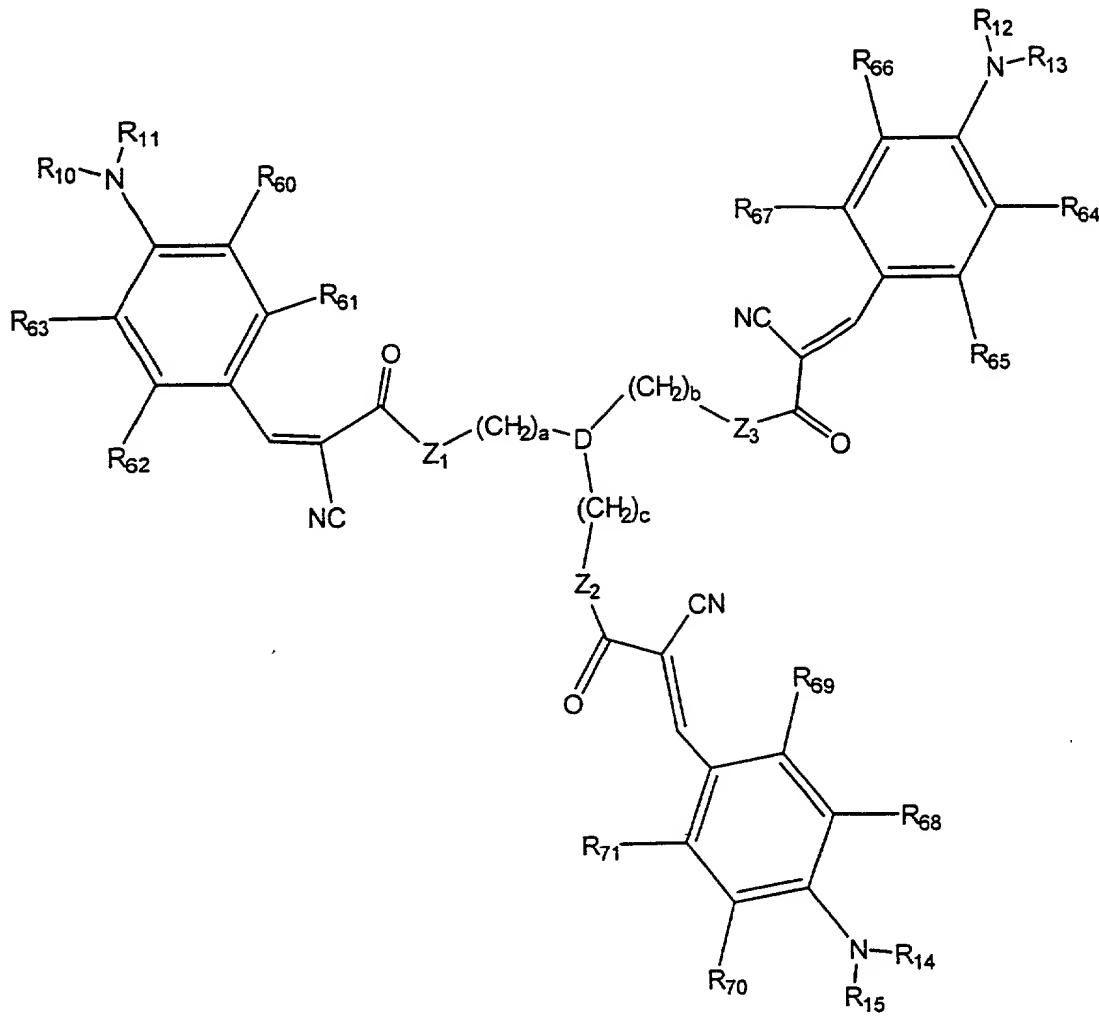
wherein R_{73} , R_{74} , R_{75} , and R_{76} are selected from the group consisting of hydrogen, halogens, hydroxy groups, alkoxy groups, trifluoromethyl groups, and alkyl groups, and can be the same as one another or different than one another; wherein said colorant comprises a chromophore that absorbs light from the 5 visible wavelength range; wherein R_{20} , R_{21} comprise at least one of carbon or hydrogen, and can be the same or different than one another; wherein Z_5 comprises at least one of C, S, O or N; and wherein b comprises an integer that is at least 1; the integer b being the same or different amongst the different segments; Z_5 being the same or different amongst the different segments; and 10 the groups R_{20} and R_{21} being the same or different amongst the different segments.

32. The phase change ink of claim 31 wherein R_{73} , R_{74} , R_{75} , and R_{76} are hydrogen.

15

33. The phase change ink of claim 31 wherein the at least two segments are joined through a common atom, said common atom being either carbon, phosphorus, sulfur or nitrogen.

34. A solid phase change ink composition consisting essentially of a colorant having the formula:



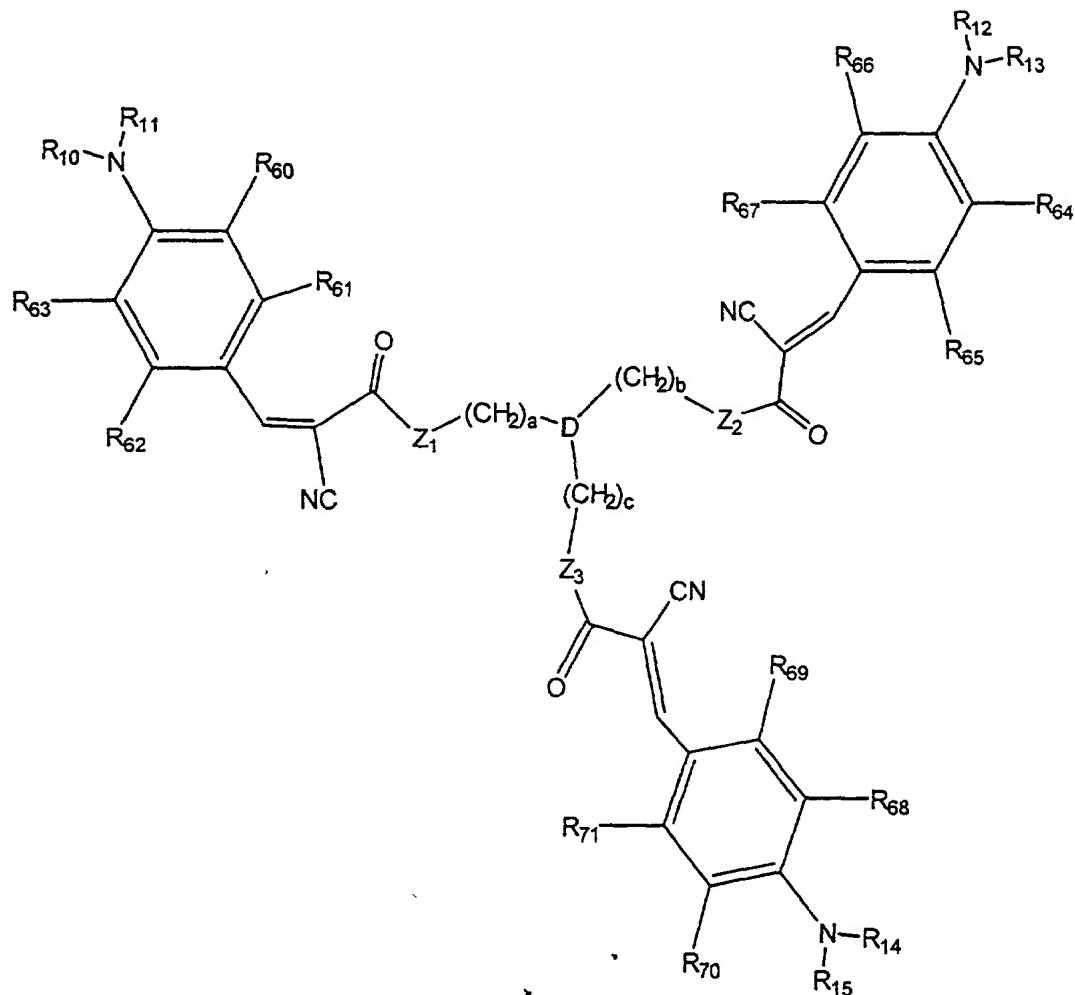
wherein R₆₀, R₆₁, R₆₂, R₆₃, R₆₄, R₆₅, R₆₆, R₆₇, R₆₈, R₆₉, R₇₀, and R₇₁ are selected

from the group consisting of hydrogen, halogens, hydroxy groups, alkoxy groups, trifluoromethyl groups, and alkyl groups, and can be the same as one another or different than one another; wherein said colorant comprises a chromophore that absorbs light from the visible wavelength range; wherein R₁₀, R₁₁, R₁₂, R₁₃,
5 R₁₄ and R₁₅ comprise at least one of carbon or hydrogen, and can be the same or different than one another; wherein D comprises carbon, sulphur, phosphorus or nitrogen, wherein Z₁, Z₂ and Z₃ can be the same or different than one another and comprise S, O, C or N; and wherein a, b and c can be the same or different than one another and are integers that are at least 1.

10

35. The phase change ink of claim 34 wherein R₆₀, R₆₁, R₆₂, R₆₃, R₆₄, R₆₅, R₆₆, R₆₇, R₆₈, R₆₉, R₇₀, and R₇₁ are hydrogen.

36. A solid phase change ink composition, comprising:
a phase change ink carrier; and
a colorant having the formula:



wherein R₆₀, R₆₁, R₆₂, R₆₃, R₆₄, R₆₅, R₆₆, R₆₇, R₆₈, R₆₉, R₇₀, and R₇₁ are selected from the group consisting of hydrogen, halogens, hydroxy groups, alkoxy groups, trifluoromethyl groups, and alkyl groups, and can be the same as one another or different than one another; wherein said colorant comprises a chromophore 5 that absorbs light from the visible wavelength range; wherein R₁₀, R₁₁, R₁₂, R₁₃, R₁₄ and R₁₅ comprise at least one of carbon or hydrogen, and can be the same or different than one another; wherein D comprises carbon, sulphur, phosphorus or nitrogen, wherein Z₁, Z₂ and Z₃ can be the same or different than one another and comprise S, O, C or N; and wherein a, b and c can be the same 10 or different than one another and are integers that are at least 1.

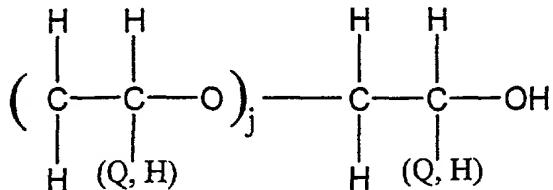
37. The phase change ink of claim 36 wherein R₆₀, R₆₁, R₆₂, R₆₃, R₆₄, R₆₅, R₆₆, R₆₇, R₆₈, R₆₉, R₇₀, and R₇₁ are hydrogen.

15 38. The phase change ink of claim 36 wherein D is a cationic form of nitrogen and accordingly has a positive charge, and further comprising a negative ion paired with the positively charged D.

39. The phase change ink of claim 36 wherein D is a cationic form 20 of nitrogen and accordingly has a positive charge, and further comprising a negative ion paired with the positively charged D, the negative ion being a halogen.

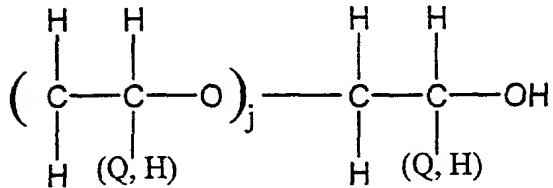
40. The phase change ink of claim 36 wherein D is a cationic form 25 of nitrogen and accordingly has a positive charge, and further comprising a negative ion paired with the positively charged D, the negative ion being deprotonated dodecyl benzene sulfonic.

41. The phase change ink of claim 36 wherein at least one of R_{10} , R_{11} , R_{12} , R_{13} , R_{14} and R_{15} comprises a chain having the formula



wherein j is an integer from 0 to about 300, wherein the representation of "(Q, H)" indicates that either a group Q or a hydrogen can be in the shown positions, wherein the group Q is either an alkyl group or an aryl group, and wherein Q can vary amongst different alkyl and aryl groups within the chain.

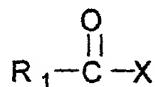
42. The phase change ink of claim 36 wherein each of R_{10} , R_{11} , R_{12} , R_{13} , R_{14} and R_{15} comprises a chain having the formula



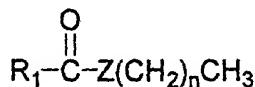
wherein j is an integer from 0 to about 300, wherein the representation of "(Q, H)" indicates that either a group Q or a hydrogen can be in the shown positions, wherein the group Q is either an alkyl group or an aryl group, and wherein Q can vary amongst different alkyl and aryl groups within the chain.

43. The phase change ink of claim 36 wherein each of Z_1 , Z_2 and Z_3 is NH.

44. A method of forming a colorant comprising reacting a first compound having the formula,



with a second compound having the formula $\text{Z}(\text{CH}_2)_n\text{CH}_3$, wherein n is an integer that is at least 12, to form a third compound having the formula,



wherein the third compound comprises a chromophore that absorbs light from the visible wavelength range.

10 45. The method of claim 44 wherein n is at least 17 and not more than 299.

46. The method of claim 44 wherein Z is selected from the group consisting of carbon, oxygen, sulphur and nitrogen.

15 47. The method of claim 44 wherein the structure $\text{Z}(\text{CH}_2)_n\text{CH}_3$ is $\text{NH}_2(\text{CH}_2)_n\text{CH}_3$.

48. The method of claim 44 wherein the structure $\text{Z}(\text{CH}_2)_n\text{CH}_3$ is
20 $\text{CH}_3(\text{CH}_2)_n-\overset{\text{H}}{\underset{\text{N}}{\text{—}}}-\text{(CH}_2)_y\text{CH}_3$

wherein y is an integer of from 0 to 300, and can be the same or different than n .

25 49. The method of claim 44 wherein X is $\text{O}(\text{CH}_2)_m\text{CH}_3$, and wherein m is an integer of from 0 to 10.

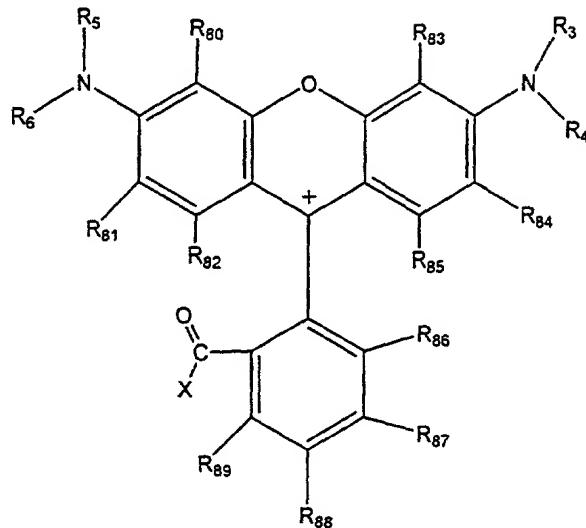
50. The method of claim 44 wherein the R₁ and the carbonyl together comprise a chemical group selected from the group consisting of ester, lactone, amide, lactam, and imide.

5 51. The method of claim 44 wherein the R₁ and the carbonyl together comprise an auxochrome.

52. The method of claim 44 wherein the R₁ comprises an auxochrome.

10 53. The method of claim 44 wherein the chromophore comprises at least a segment selected from the group consisting of methine, metal phthalocyanine, azamethine, azo, triphenylmethane, rhodamine, xanthene, indoaniline, pyridone, perylene, anthrapyridone and anthraquinone.

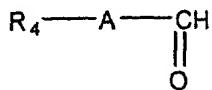
54. The method of claim 44 wherein the first compound is



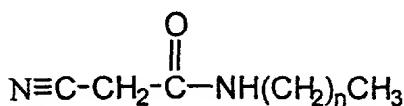
wherein R₈₀, R₈₁, R₈₂, R₈₃, R₈₄, R₈₅, R₈₆, R₈₇, R₈₈, and R₈₉ are selected from the group consisting of hydrogen, halogens, hydroxy groups, alkoxy groups, trifluoromethyl groups, and alkyl groups, and can be the same as one another or different than one another; wherein R₃, R₄, R₅ and R₆ comprise carbon and can be the same or different than one another.

10 55. The method of claim 54 wherein R₈₀, R₈₁, R₈₂, R₈₃, R₈₄, R₈₅, R₈₆, R₈₇, R₈₈, and R₈₉ are hydrogen.

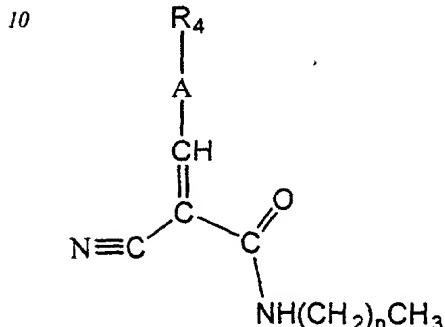
56. A method of forming a colorant comprising:
providing a first compound having the formula



wherein A is an aromatic ring and R_4 comprises one or both of carbon and hydrogen, and wherein said first compound comprises a chromophore that absorbs light from the visible wavelength range; and reacting said first compound with a second compound having the formula



to form a third compound having the formula



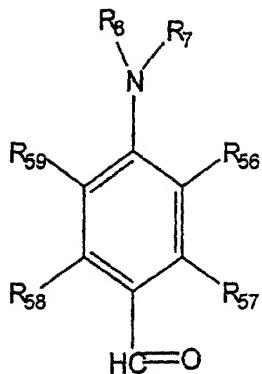
wherein n is an integer that is at least 12.

57. The method of claim 56 wherein n is at least 17 and not more than 299.

15

58. The method of claim 56 wherein the second compound comprises stearyl cyanoacetate, stearyl cyanoacetamide, or a mixture of stearyl cyanoacetate and stearyl cyanoacetamide.

59. The method of claim 56 wherein the first compound is

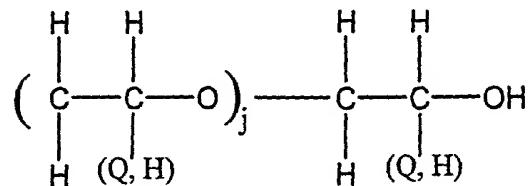


wherein R₅₆, R₅₇, R₅₈, and R₅₉ are selected from the group consisting of 5 hydrogens, halogens, hydroxy groups, alkoxy groups, trifluoromethyl groups, and alkyl groups, and can be the same as one another or different than one another; and wherein R₇ and R₈ can be the same or different than one another, can be comprised by a common ring, and are selected from the group consisting of H and carbon-containing materials.

10

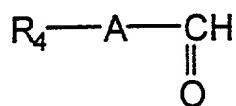
60. The method of claim 59 wherein R₅₆, R₅₇, R₅₈, and R₅₉ are hydrogen.

61. The method of claim 59 wherein at least one of R_7 and R_8 comprises a chain having the formula,

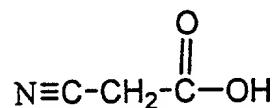


wherein j is an integer from 0 to about 300, wherein the representation of "(Q, H)" indicates that either a group Q or a hydrogen can be in the shown positions, wherein the group Q is either an alkyl group or an aryl group, and wherein Q can vary amongst different alkyl and aryl groups within the chain.

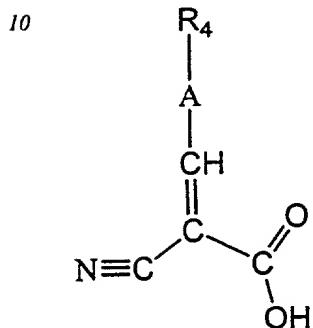
62. A method of forming a colorant comprising:
providing a first compound having the formula



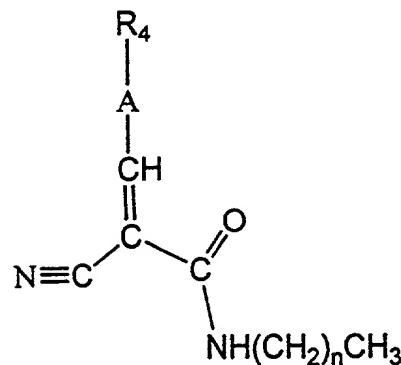
wherein A is an aromatic ring and R_4 comprises one or both of carbon and
5 hydrogen, and wherein the combination of R_4 and A comprises a chromophore
that absorbs color in the visible wavelength range; reacting said first compound
with a second compound having the formula



to form a third compound having the formula;



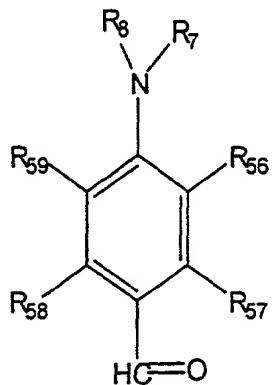
and reacting said third compound with $\text{NH}_2(\text{CH}_2)_n\text{CH}_3$ to form



wherein n is an integer that is at least 12.

63. The method of claim 62 wherein n is at least 17 and not more than 299.

64. The method of claim 62 wherein the first compound is

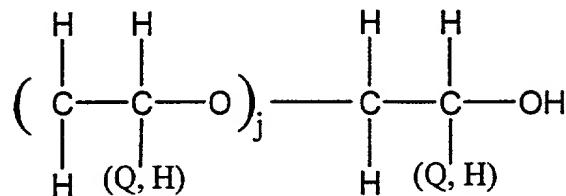


wherein R₅₆, R₅₇, R₅₈, and R₅₉ are selected from the group consisting of
5 hydrogen, halogens, hydroxy groups, alkoxy groups, trifluoromethyl groups, and alkyl groups, and can be the same as one another or different than one another; and wherein R₇ and R₈ can be the same or different than one another, can be comprised by a common ring, and are selected from the group consisting of H and carbon-containing materials.

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65. The method of claim 64 wherein R₅₆, R₅₇, R₅₈, and R₅₉ are hydrogen.

66. The method of claim 64 wherein at least one of R₇ and R₈ comprises a chain having the formula,



wherein j is an integer from 0 to about 300, wherein the representation of "(Q, H)" indicates that either a group Q or a hydrogen can be in the shown positions, wherein the group Q is either an alkyl group or an aryl group, and wherein Q can vary amongst different alkyl and aryl groups within the chain.